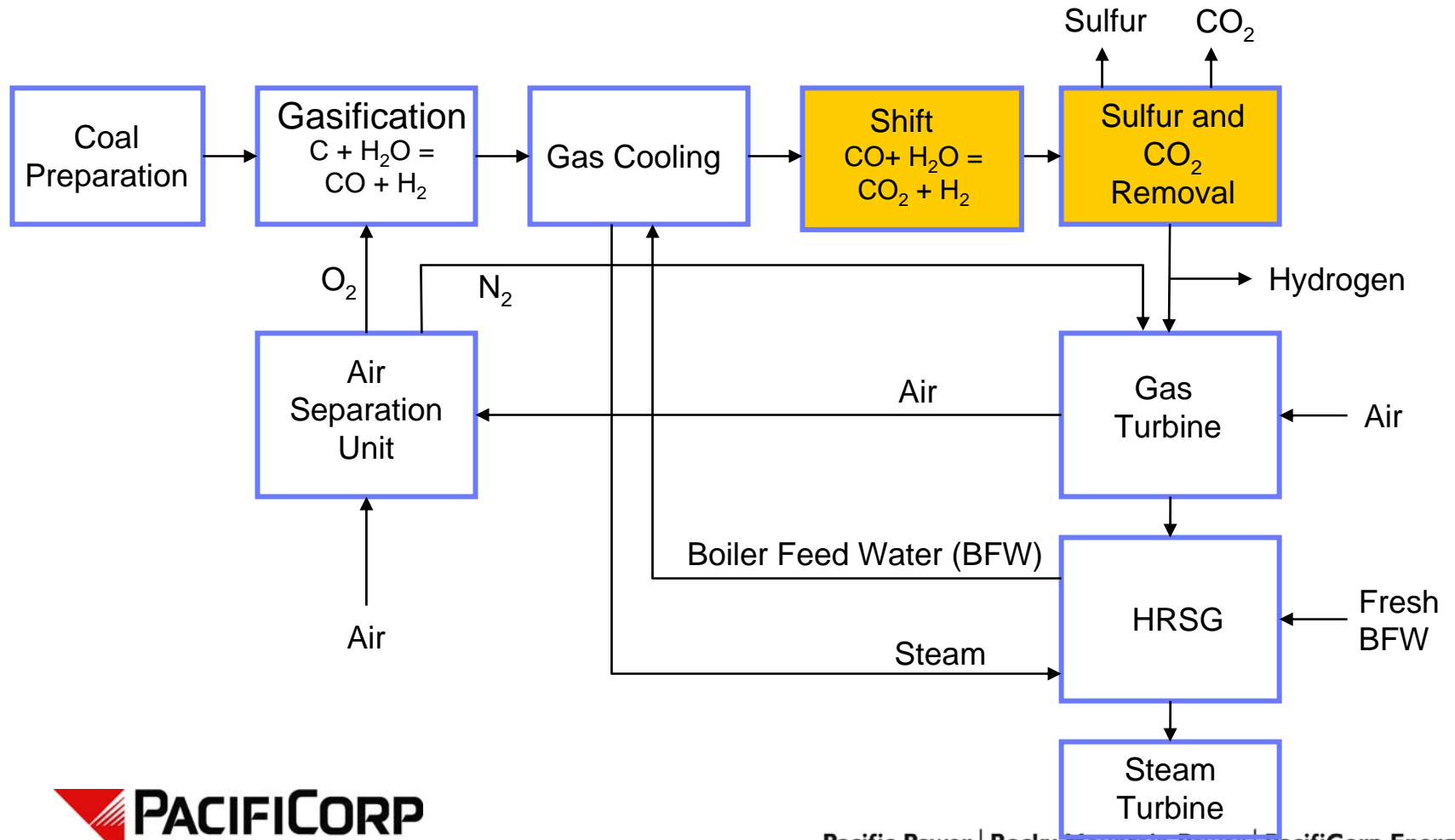


# IGCC with CO<sub>2</sub> Capture



## Water Use Considerations

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- Lack of information in published studies on the water use required with an optimized IGCC CO<sub>2</sub> capture process
- Worst Case is presented
- Water balance optimization could reduce increase in water use through additional recycling.
- High quality water for the shift reactor will be needed.

## IGCC Water Use with Carbon Capture

- $\text{CO} + \text{H}_2\text{O} \longrightarrow \text{CO}_2 + \text{H}_2$
- For a Hunter 4 IGCC
  - ▶ 508 MW capacity
  - ▶ 3,585,000 tons of  $\text{CO}_2$  per year without capture
    - Water use = 4,500 ac-ft/yr
  - ▶ 90% capture = 3,225,000 tons of  $\text{CO}_2$  per year removed
  - ▶ Worst Case:
    - 907,000 tons of water a year based on above equation
    - 414 gpm equivalent water usage
    - 675 ac-ft/yr additional
    - Increase in water use ~ 15%